PI Control of a Continuous Bio-Reactor

Rudy Agustriyanto

Department of Chemical Engineering, Faculty of Engineering, University of Surabaya (UBAYA), Surabaya, Indonesia;

**Corresponding Author*: rudy.agustriyanto@staff.ubaya.ac.id.

Abstract

A bio-reactor is a vessel in which chemical process is carried out which involves organisms or biochemically active substances derived from such organisms. On the basis of mode of operation, a bio-reactor may be classified as batch, fed batch or continuous (e.g. a continuous stirred-tank reactor model). An example of a continuous bio-reactor is the chemostat. This paper investigates a PI (Proportional Integral) control of a continuous bio-reactor which is tuned by direct synthesis method. Process performance for servo problem were presented in this paper.

Key words: Proportional Integral control, simulation, bioreactor, direct synthesis method.

Introduction

The use of a control system for monitoring and controlling a biological process is shown in Figure 1 (Dochain, 2008). The central element of this scheme is the process. On this process, a number of measurements were carried out, either in the liquid or gas medium. On the basis of the knowledge available about the process and the control objectives, control algorithm can be developed.